

METHOD AND SYSTEM FOR DETERMINING DATA RATE
USING SUB-BAND CAPACITY

ABSTRACT

5 The present invention is directed to methods and systems for providing an
accurate estimate of the channel capacity that may be performed for each symbol rate
tested during line probe. In addition, an optimal symbol rate under a set of conditions
may be determined using the capacities for each tested symbol rate. In the G.SHDSL (or
10 other) standard, provisions may be made for rate negotiation to take place between two
communicating modems after a line probe session. The present invention provides an
approach to rate negotiation that implements an approximation of channel capacity using
a geometric mean calculation. The capacity for a plurality of M frequency sub-bands
may be computed to find an estimate of channel capacity for a rate of interest. The sub-
15 bands may be any segment of a total N frequency bands found with a discrete Fourier
transform (DFT) or other method of spectrum estimation.